Catalogue of American Amphibians and Reptiles.

Price, Robert. M 1990. *Bogertophis.*

Bogertophis. Dowling and Price Trans-Pecos and Santa Rosalia Snakes

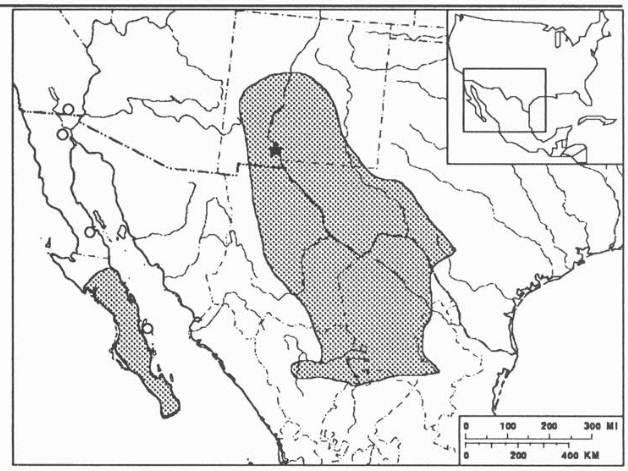
Bogertophis Dowling and Price, 1988:52. Type-species, *Bogertophis subocularis* Brown, 1901:492, by original designation.

• **Content.** Two species, *rosaliae* and *subocularis*, are included.

• **Definition.** A genus of colubrid snakes having a small hemipenis (8-10 subcaudals long), without basal hooks or distinct distal lobes, and with the basal portion covered by fine spinules. The genus has a lorilabial row of 3-7 scales, and usually 10-11 supralabials. The ventrals range from 260-287, the anal scute is divided, and the paired subcaudals range from 60 to 94. The dorsal scale count of approximately 29+35+21 is increased or reduced by the addition or loss of mid-lateral scale rows. The dorsal scales have two small rounded pits; the scales are smooth to row 5, with rows above generally having low keels, at least posteriorly. The dorsal scale microdermatoglyphics are papillate without canaliculi, the papillae falling into regular vertical pleats (*B. subocularis*), or strioreticulate with indistinct vertical pleats (*B. rosaliae*). There is no apparent sexual dimorphism in any feature of scutellation or pattern.

• **Diagnosis.** *Bogertophis* may be morphologically distinguished from *Pituophis* by its lack of an epiglottal structure, its divided anal scute, and by the absence of canaliculi in the microdermatoglyphic pattern of the dorsal scales. It is distinguished from *Arizona* by its rounded rostral (slightly pointed, partly separating the internasals in *Arizona*), lorilabial scales, keeled dorsal scales with paired apical pits (vs smooth with single apical pits), a different hemipenial morphology, divided anal scute, and echinate microdermatoglyphic pattern of *Arizona* (Price, 1981). It differs from *Senticolis* in the presence of lorilabial scales, a vastly different hemipenis, a much shorter tail, and lack of regular echinules and the presence of pleating in the microdermatoglyphic pattern of the dorsal scales. It may be distinguished from *Elaphe* (sensu stricto) by its shorter tail, smaller, spinulose hemipenis, the presence of lorilabial scales, and in the absence of regular echinules and the presence of pleating in the microdermatoglyphic pattern of the dorsal scales. *Bogertophis* appears to be unique among colubrine snakes in possessing diploid karyotypes of 38 or 40 chromosomes with few metacentric chromosomes, and in lacking any sexual dimorphism in body proportions or scutellation.

• **Descriptions and Illustrations.** Dowling (1957) provided a comprehensive description, including merisitic and mensural characters, head and body illustrations, and hemipenial illustrations of these snakes, which then comprised the Rosaliae Section of the genus *Elaphe*. The most recent description and differentiation of *Bogertophis*, *Elaphe*, and *Pituophis*, including hemipenial illustrations, immunological comparisons, and microdermatoglyphic photographs, is in Dowling and Price (1988).



Map. Shaded area represents the approximate range of the genus *Bogertophis*. Open circles indicate presumed isolated populations. Star represents fossil locality.

Worthington (1980) provided a comprehensive review of *B. subocularis* under its former generic allocation, *Elaphe* (see the species account). The only comprehensive description of *B. rosaliae* is Dowling's (1957). Dowling and Price (1988) updated much of that account. *Bogertophis rosaliae* is illustrated in Ottley and Jacobsen (1983). For the most current information, see the species account (Price, 1990).

• **Distribution and Biology.** The genus has three disjunct distributions, from the Organ and Guadalupe mountains of southcentral New Mexico, through Trans-Pecos Texas to the Chisos Mountains and Stockton Plateau of the Big Bend to the southwestern edge of the Edwards Plateau, and south through Coahuila and Chihuahua, México, including parts of eastern Durango and western Nuevo León. It is also found in the southern half of Baja California. There are disjunct records for Imperial County, California (a single specimen), and non-peninsular northern Baja California at Guadalupe Canyon. Elevational range is from near sea level in Baja California to over 5400 feet in the Chisos Mountains in Texas.

The disjunction in the genus range is thought to be a result of extremely xeric conditions in the present day Sonoran and Mojave Desert regions during the Pleistocene, and the intrusion of the Laurentide glaciations into California and Baja California, and is closely approximated by a number of other colubrid taxa.

The recent decline in numbers of *Bogertophis subocularis* seen in Trans Pecos Texas apparently is the result of overcollecting for the

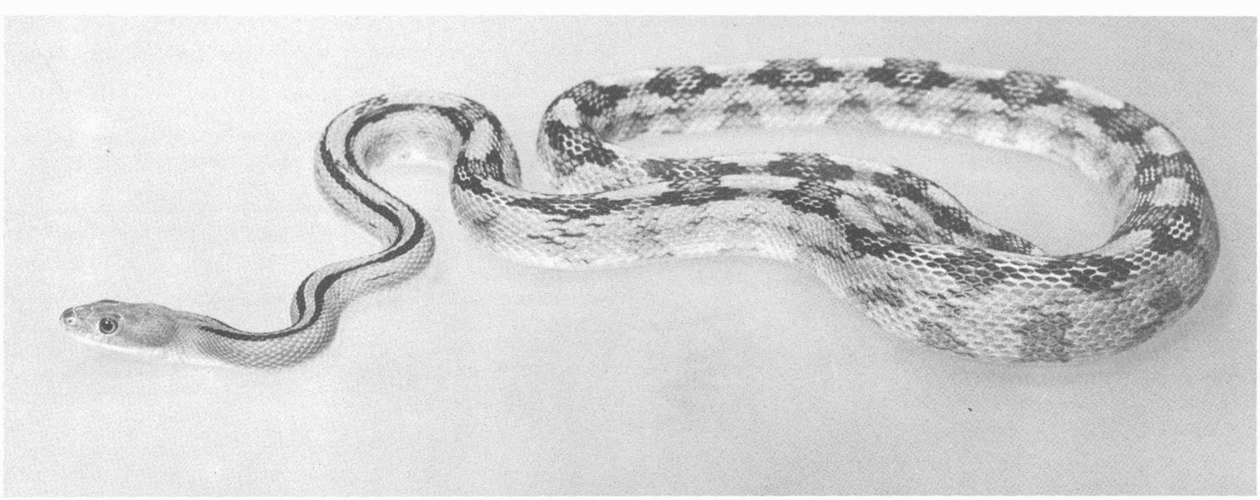


Figure 1. *Bogertophis subocularis*, adult male. Courtesy of Herndon G. Dowling.

pet trade from motor vehicles. Collection of gravid females has led to a substantial decrease in roadside populations, but probably has had little effect on population densities in undeveloped areas.

Worthington (1980) did not mention the habitat preferences or habits of *B. subocularis*. It is largely a plateau species, which is most common in the slightly more humid mountainous areas of its arid range. Most specimens have been collected from mountainous, rocky, or otherwise rough country, often in association with permanent water. The species is very common along the Rio Grande. Kauffeld (1969) provided a colorful account of its habitat. The species is largely nocturnal as evidenced by its large eyes. It feeds primarily on small rodents. The habits and habitat of *B. rosaliae* are less well known (Price, 1990).

• **Fossil Record.** *Bogertophis subocularis* is known from Pleistocene cave deposits on the western flank of Pyramid Peak, Organ Mountains, Doña Ana County, New Mexico (Brattstrom, 1964).

• **Pertinent Literature.** The most important papers concerning this genus have been cited in the Descriptions section. Schmidt (1925) was the first to recognize the relationship between the two species. For literature citations pertinent to the individual species, see the relevant species accounts.

• **Key to Species.** Numbers of relevant species accounts are indicated in parentheses.

Dorsal coloration yellow-orange to carrot red with net-like pattern of light middorsal and lateral streaks or no distinct dorsal pattern, five or fewer dorsal scale rows keeled at mid-body .... *rosaliae* (498)

Dorsal coloration yellowish buff to tan, with suffusion of orange anteriorly and laterally in some specimens, pattern of 21 to 28 dark and distinct H shaped blotches, seven or more dorsal scale rows keeled at midbody .... *subocularis* (268)

• **Remarks.** Recent immunological comparisons (Dowling and Price, 1988) indicate that *B. subocularis* and *Elaphe obsoleta* last shared a common ancestor 13-14 million years ago and that *Bogertophis* is evolutionarily closer to *Pituophis* than to North American *Elaphe*, therefore it is misleading to continue to call the members of the genus *Bogertophis* rat snakes, even *sensu lato*.

• **Etymology.** The genus was named *Bogertophis* for Charles M. Bogert, emeritus curator of the Department of Herpetology of the American Museum of Natural History, in recognition of his many contributions to the systematics of colubrid snakes.

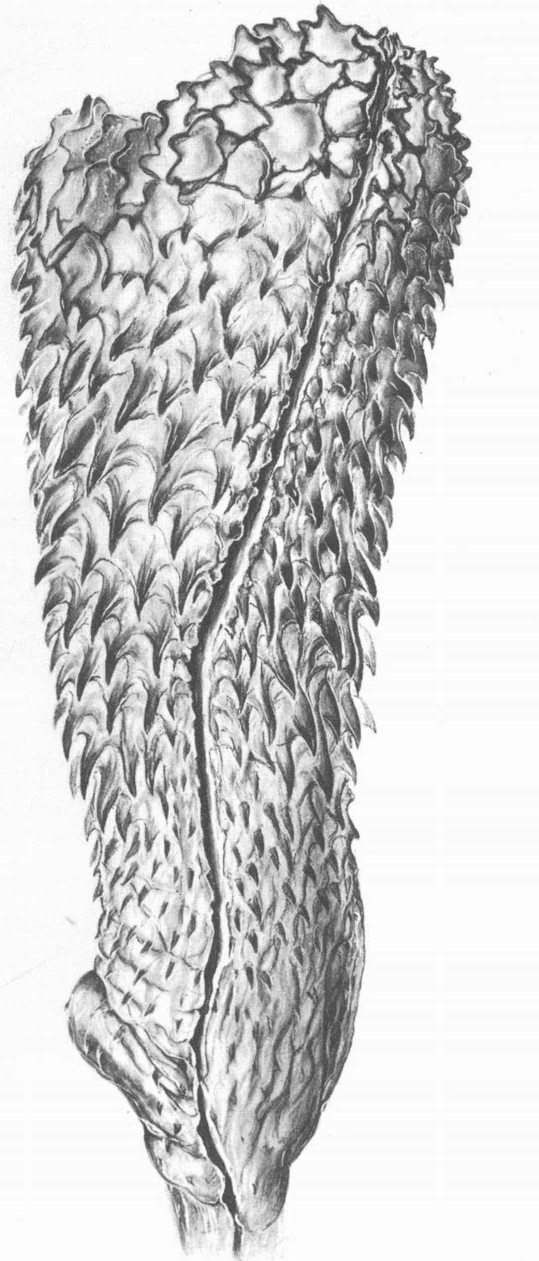


Figure 2. Everted hemipenis of *Bogertophis subocularis*. Courtesy of Herndon G. Dowling.

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Robert M. Price, Department of Biology, New York University, New York, New York 10003.

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